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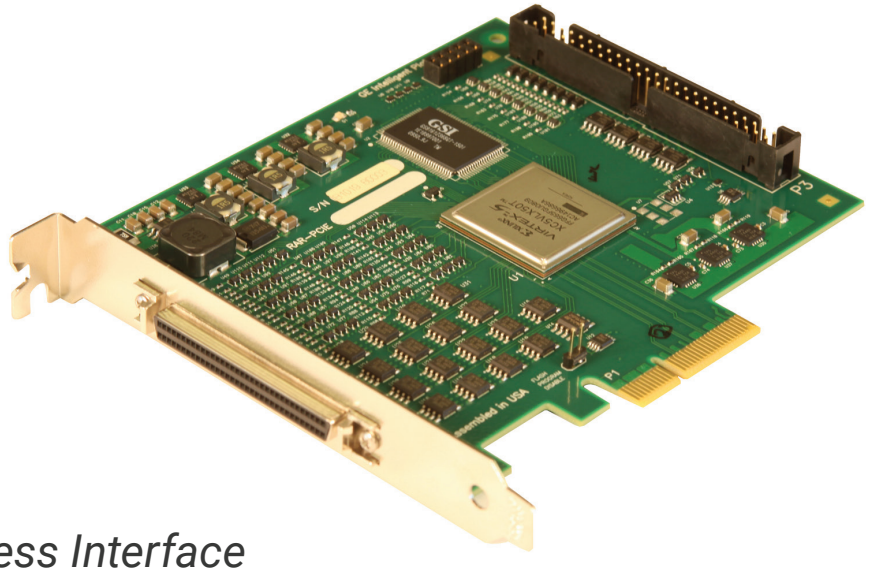
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RAR-PCIE

ARINC High Density PCI Express Interface

Hardware

Available in a range of configurations to match your needs, RAR-PCIE provides complete, integrated databus functionality for ARINC 429, ARINC 575 and selected 2-wire, 32-bit protocols. The RAR-PCIE supports maximum data throughput on all channels while providing onboard message scheduling, label filtering, multiple buffering options, time-tagging, error detection and avionics-level I/O discretes. Configurations with support for ARINC 717, ARINC 573, and IRIG-B Receiver (AM or DC/TTL) and Generator (DC/TTL) support are optional. The IRIG-B DC level signal can be utilized to synchronize time stamps across multiple boards. Several RAR-PCIE configurations offer combinations of ARINC 429 channels along with ARINC 717/573 Dual-Mode functionality. Dual-Mode functionality programmatically supports either HBP (Harvard Bi-Phase) or BPRZ (Bi-Polar Return to Zero) across a very wide range of Bit Rate/ Subframe combinations.

Software

Abaco Systems' software tools and solutions significantly reduce the time required to integrate ARINC 429 and other avionics protocols into your application. Included with the RAR-PCIE is our flexible, high- level, API (Application Programming Interface) support for Microsoft Windows® and Linux®, (contact Abaco Systems for the specific O/S versions supported). This powerful API supports multiple cards, and is compatible with Abaco Systems API support on PCI Express®, Mini-PCIe, ExpressCard, PCI, PC/104-Plus, CompactPCI, PMC and XMC platforms. Optional software includes LabVIEW support and BusTools/ARINC, Abaco's easy- to-use; Windows based GUI solution for ARINC 429 analysis, simulation and data logging.

Architecture

RAR-PCIE features include independent, soft-ware programmable data rates and parity, error detection and automatic transmit channel slew rate adjustment. 2 MBytes of on-board RAM provide large transmit and receive data buffers. All channels operate independently. Discretes support TTL to 16 avionics-level inputs and 16 outputs while open-collector outputs enhance application flexibility.

Data Handling

On-board firmware, large data buffers, and a high-level API are integrated to provide total flexibility in monitoring and generating ARINC bus traffic. Simultaneous Scheduled and Burst Mode (FIFO) messaging is supported on all ARINC 429 transmit channels. Each ARINC 429 receive channel provides simulta-neous Dedicated and Buffered Mode storage, along with label/SDI filtering.

Three different methods are provided to buffer received data:

- Buffered Mode utilizes a separate circular buffer for each channel.
- Merged Mode combines all received data into a single, time-sequenced circular buffer.
- Dedicated Mode provides a snapshot of the very latest data.

FEATURES:

- Up to 16 Rx and 16 Tx ARINC 429 channels
- Native 4 lane PCI Express interface (no bridge)
- High performance, high density interface with large buffers
- Easy-to-use BusTools/ARINC Windows-based GUI Bus Analyzer available
- Advanced, high-level software API included
- Supports maximum data throughput on all channels simultaneously
- 16 input and 16 output discretes that handle avionics-level voltages
- Independent, software-programmable bit rates for all channels
- Error injection/detection
- Support for 2-wire ARINC 573, 575, and 717
- IRIG-B Receiver/Generator optional
- On Board Temperature and voltage monitoring

abaco SYSTEMS

RAR-PCIE *ARINC High Density PCI Express Interface*

Specifications

ARINC 429 Receive Channels

- Number of channels: up to 16
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 KHz programmable
- Standard input levels: ± 6.5 to ±13 VDC (A to B)
- Filtering: label and/or SDI
- Parity: odd, even or none
- Error reporting: parity

ARINC 429 Transmit Channels

- Number of channels: up to 16
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 KHz programmable
- Automatic slew rate adjustment
- Output level: ±10 VDC typical (A to B)
- Parity: odd, even or none
- Error injection option: parity, gap, high or low bit count

Software

- Distribution includes source code for all supported operating systems (CEI-x30-SW)
- GUI - Optional BusTools/ARINC GUI bus analyzer

Physical

- PCI Express Interface Card standard height, half length (4.376 x 5.0 inches)
- Front bezel connector I/O

Environmental

- Operation Temperature range -40C to +75C (E option)
- Relative humidity: 5 up to 95% (non-condensing)
- Optional conformal coating

Discrete Inputs and Outputs

- Number of inputs: 16
- Supports monitoring of TTL/CMOS/ Avionics level voltages
- Number of outputs: 16
- Low side switches, each capable of sinking 0.5 ampere

Optional Configurations

- A wide range of Rx/Tx combinations
- ARINC 573/717 Bi-Polar RZ and Harvard Bi-Phase
- IRIG-B Receiver (AM or DC/TTL) and Generator (DC-TTL)
- Optional conformal coating
- Contact factory for custom configurations

Power (typical)

- +3.3 VDC: 600 mA
- +12 VDC: 140 mA (no loads)

Ordering information

RAR-PCIE-22	ARINC 429 intelligent 4 lane PCI Express card with 2 RX, 2 TX channels; ROHS compliant
RAR-PCIE-22J	ARINC 429 intelligent 4 lane PCI Express card with 2 RX, 2 TX channels 1 RX, 1 TX Dual-mode ARINC 717 channels; ROHS compliant
RAR-PCIE-44	ARINC 429 intelligent 4 lane PCI Express card with 4 RX, 4 TX channels; ROHS compliant
RAR-PCIE-44J	ARINC 429 intelligent 4 lane PCI Express card with 4 RX, 4 TX channels; 1 RX, 1 TX Dual-mode ARINC 717 channels; ROHS compliant
RAR-PCIE-88	ARINC 429 intelligent 4 lane PCI Express card with 8 RX, 8 TX channels; ROHS compliant
RAR-PCIE-88J	ARINC 429 intelligent 4 lane PCI Express card with 8 RX, 8 TX channels; 1 RX, 1 TX Dual-mode ARINC 717 channels; ROHS compliant
RAR-PCIE-1608	ARINC 429 intelligent 4 lane PCI Express card with 16 RX, 8 TX channels; ROHS compliant
RAR-PCIE-0816	ARINC 429 intelligent 4 lane PCI Express card with 8 RX, 16 TX channels; ROHS compliant
RAR-PCIE-1515J	ARINC 429 intelligent 4 lane PCI Express card with 15 RX, 15 TX channels; 1 RX, 1 TX Dual-mode ARINC 717 channels; ROHS compliant
RAR-PCIE-1616	ARINC 429 intelligent 4 lane PCI Express card with 16 RX, 16 TX channels; ROHS compliant
RAR-PCIE-48	ARINC 429 intelligent 4 lane PCI Express card with 4 RX, 8 TX channels; ROHS compliant
RAR-PCIE-84	ARINC 429 intelligent 4 lane PCI Express card with 8 RX, 4 TX channels; ROHS compliant
RAR-PCIE-42	ARINC 429 intelligent 4 lane PCI Express card with 4 RX, 2 TX channels; ROHS compliant
RAR-PCIE-1601	ARINC 429 intelligent 4 lane PCI Express card with 16 RX, 1 TX channels; ROHS compliant
E suffix	-40C to +75C Operating temp
K suffix	Conformal coating
W suffix	IRIG-B Receiver (AM or DC/TTL) and Generator (DC-TTL)

Optional Software

BT-ARINC	BusTools ARINC Windows GUI software for ARINC Bus Analysis, Simulation and Datalogging.
CEI-DL	ARINC 615-3 Data Loader GUI
CEI-LV	LabVIEW support for ARINC 429

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